

**SOUTH DAKOTA BAITFISH HARVEST
2003 SUMMARY**

**South Dakota
Department of
Game, Fish and Parks
Wildlife Division
Joe Foss Building
Pierre, South Dakota 57501-3182**

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SOUTH DAKOTA BAITFISH HARVEST SUMMARY
January 1 – December 31, 2003

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Wildlife Division, Pierre, SD

Annual Report

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PREFACE

Information presented in this summary was collected from bait dealer report forms covering the period January 1, 2003 through December 31, 2003. Copies of this report and reference to the data can be made with permission from the author or Director of the Division of Wildlife, South Dakota Department of Game, Fish and Parks, 523 East Capitol, Pierre, South Dakota, 57501.

EXECUTIVE SUMMARY

Baitfish harvest in South Dakota is important from a biological and economical perspective. Given the importance of baitfish to South Dakota it is beneficial to determine the extent of baitfish harvest from South Dakota waters. Baitfish dealers that request a baitfish license are required to submit a baitfish dealer report that details baitfish transactions the previous year. Information contained in this summary are extrapolated from the baitfish dealer reports submitted by baitfish dealers that were licensed during the baitfish season of 2003 (January 1 through December 31, 2003).

A total of 179 of the 218 licensed baitfish dealers returned baitfish dealer report forms for an overall-reporting rate of 82.1%. Baitfish harvest in South Dakota was comprised of fathead minnows *Pimephales promelas*, white sucker *Catostomus commersoni*, and golden shiner *Notemigonus crysoleucas*. Licensed baitfish dealers reportedly obtained a total of 259,022 gallons and sold 192,396 gallons of baitfish during 2003. The “sold to obtained” ratio was 0.7428 and many sales of baitfish were apparently not reported. Baitfish dealers reported that 202,590 gallons of baitfish were harvested from South Dakota’s public and private waters. Private waters provided the majority (82.2%) of baitfish harvested from South Dakota waters. Fathead minnows comprised 98.9% of the total baitfish harvest during 2003 from South Dakota waters. The 2003 reported harvest of fathead minnows from public waters was below the historic mean and similar to the harvest reported during 2002. In fact, the harvest of fathead minnows from public waters has been relatively consistent at 40,000 minnows since 1998. Baitfish dealers reported harvesting fathead minnows from 14 counties in South Dakota with the greatest harvest occurring in Hamlin County (19.1%).

Export baitfish dealers reported purchasing 126,776 gallons of baitfish from resident wholesale dealers. The reported export of baitfish by export dealers represents approximately 49% of the total reported baitfish obtained by wholesale baitfish dealers. Over two-thirds of the baitfish exported from South Dakota by export baitfish dealers were destined for Minnesota (37.1%) and Wisconsin (25.1%). The economic valuation of baitfish harvest to the South Dakota economy ranged from 3.2 million dollars to 4.1 million dollars depending on using the reported sales or potential sales by baitfish dealers.

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INTRODUCTION

Baitfish harvest in South Dakota is important from a biological and economical perspective. In general, the harvest of baitfish may affect sport fisheries because many sport fish populations depend on baitfish for sustenance. In addition, the harvest of baitfish can affect other (non-fish) food chain members of prairie wetlands such as waterfowl through competition for similar prey (Duffy 1996).

Recently, the baitfish harvest in South Dakota has been mainly comprised of fathead minnows *Pimephales promelas* (Soupir 2003). Fathead minnows are the most common fish species present in prairie wetlands (Peterka 1989) and fathead minnows serve as an important prey for piscivorous fish of prairie lakes due to their apparent ubiquitous distribution and high abundance (Isaak et al. 1993; Sammons et al. 1994). Other baitfishes commonly utilized by baitfish dealers in South Dakota include white sucker *Catostomus commersoni* and golden shiner *Notemigonus crysoleucas*. Baitfish dealers typically report baitfish in three general categories that include minnows (fathead minnow), suckers or chubs (white suckers), and shiners (golden shiners).

Economically, the baitfish harvest is important to the South Dakota State economy and yielded a valuation of approximately 3.8 million dollars during the 2001 baitfish harvest season (Broughton and Potter 2002). Given the importance of baitfish to South Dakota it is beneficial to determine the extent of baitfish harvest from South Dakota waters. The objective of this summary is to provide a synthesis of the baitfish license transactions within and outside of South Dakota as reported by baitfish dealers. Information contained in this summary is beneficial to fisheries managers, fisheries biologists, as well as conservation officers in monitoring future baitfish harvest from public waters and in developing potential management direction.

METHODS

Baitfish dealers that request a baitfish license are required to submit a baitfish dealer report that details baitfish transactions the previous year. The information included in this summary was extrapolated from baitfish dealer reports submitted by baitfish dealers that were licensed during the baitfish season of 2003 (January 1 through December 31, 2003). If a baitfish dealer that was licensed during the 2003 baitfish season did not seek to obtain a baitfish license for the 2004 baitfish season that licensed dealers 2003 baitfish transactions were excluded from this report.

Baitfish licenses are divided into five types based on the residence status of the dealer and the types of sales anticipated by the dealer (Table 1). Of special consideration is that nonresident wholesale and retail bait dealer licenses are available only if the home state of the licensee provides the same opportunity for South Dakota residents. All baitfish transactions were reported in U.S. gallons (± 1.0 gallon).

Table 1. License information (types, privileges and associated fees), number of licenses issued, number of license holders that reported and the percent reporting rate (Percent) for South Dakota bait dealer licenses during 2003 (January 1 - December 31).

License Information			N		Percent (%)
License type	Privileges	Fee (\$)	sold	reported	
Resident retail	May raise, trap, possess, buy and sell bait at retail. May not sell to wholesale, export or other retail dealer.	20	175	142	81.1
Resident wholesale	May raise, trap, buy, possess and sell bait to retail, wholesale or export dealers.	200	22	19	86.4
Export	May buy, possess and transport bait to other states for resale.	300	20	17	85.0
Nonresident wholesale	May transport bait into South Dakota and sell to retail, wholesale or export dealers.	400	1	1	100.0
Nonresident retail	May come from another state to buy, sell, possess and transport bait within South Dakota. May not sell to wholesale, export or other retail dealers.	40	0	0	---
Totals			218	179	82.1

RESULTS AND DISCUSSION

During 2003, a total of 218 baitfish licenses were sold and were comprised mostly of resident retail licenses (80 percent; %), resident wholesale licenses (10%), and export licenses (9%) (Table 1). Overall, 179 (82.1%) of the 2003 licensed baitfish dealers reported. Resident wholesale dealers (86.4%), followed by export dealers (85.0%), and resident retail dealers (81.1%) demonstrated the highest reporting rate. A single nonresident wholesale dealer was licensed in 2003 and reported for a reporting rate of 100 percent.

Licensed baitfish dealers reported obtaining 259,022 gallons and selling 192,396 gallons of baitfish during the 2003 baitfish season (Table 2). A “sold to obtained” ratio of 0.7428 indicates that approximately 25% (66,626 gallons) of the baitfish reportedly obtained by licensed baitfish dealers were either not reported as sold, not sold, or lost to mortality. Special consideration should be made when interpreting the results contained in this summary because many baitfish dealers failed to report the gallons of minnows sold. In fact, only 62% of the resident retail baitfish dealers reported any sales even though they obtained baitfish. An attempt was made to estimate the percentage of baitfish lost (difference between baitfish reported obtained and sold) from dealers that had reported; however, excluding baitfish dealers that did not report baitfish sold resulted in more baitfish sold than were reportedly obtained. Other attempts at determining the percentage of baitfish lost would result in unreasonable assumptions. Thus, due to the inconsistencies in reporting by baitfish dealers this summary will only include transactions that were directly reported by baitfish dealers. If desired, readers of this summary may assume that nearly 100% of the baitfish obtained eventually sold.

Baitfish Source Waters

Baitfish dealers reported that 202,590 gallons of baitfish were harvested from South Dakota’s public and private waters. Private waters provided 166,487 gallons of baitfish (82.2%). Conversely, public waters in South Dakota supplied just below 18% of the baitfish harvest (36,104 gallons). Fathead minnows comprised 98.9% of the total baitfish harvested from South Dakota waters regardless of public or private ownership (Table 3). The harvest of fathead minnows from public waters declined during the late 1990’s as water levels increased in northeastern South Dakota and inundated many private grounds. The general trend of decreased baitfish harvest from public waters has remained relatively steady since 1998. In fact, the 2003 reported harvest of fathead minnows from public waters (35,784 gallons) was below the historic mean (54,989 gallons) and similar to the harvest of fathead minnow reported from 1998 through 2002 (Figure 1; Appendix 1) (Soupir 2003).

Table 2. Volume (gallons) of all baitfish combined (fathead minnows, white suckers, and shiners) obtained and sold as reported by South Dakota resident retail and resident wholesale baitfish dealers during 2003 (January 1 - December 31).

<i>Activity</i>	Retail		Wholesale		Combined	
<i>Source/Destination</i>	gallons	%	gallons	%	gallons	%
All Baitfish Combined						
<i>Harvested</i>	3,965	100.0	198,625	100.0	202,590	100.0
Public water	397	10.0	35,707	18.0	36,104	17.8
Private water	3,569	90.0	162,918	82.0	166,487	82.2
<i>Purchased</i>	20,138	100.0	36,294	100.0	56,432	100.0
Resident wholesale	18,106	89.9	33,010	91.0	51,116	90.6
Imported wholesale	2,032	10.1	3,284	9.0	5,316	9.4
<i>Total Obtained</i> ¹	24,103	---	234,919	---	259,022	---
<i>Sold</i> ²	18,619	100.0	173,777	100.0	192,396	100.0
South Dakota ²	18,619	100.0	61,976	35.7	80,595	41.9
Exported ³	---	---	111,801	64.3	111,801	58.1
<i>Sold:Obtained Ratio</i>	0.7725	---	0.7397	---	0.7428	---

¹ Does not include baitfish obtained by resident wholesale from other resident wholesale.

² Does not include baitfish sold to resident wholesale from other resident wholesale.

³ Retail license holders may not export, wholesale or sell live baitfish to other retail dealers. Includes baitfish sold to export dealers and retail dealers in neighboring states.

Table 3. Volume (gallons) of fathead minnows (fathead), suckers (sucker), and shiners (shiner) obtained and sold as reported by South Dakota resident retail and resident wholesale baitfish dealers during 2003 (January 1 - December 31).

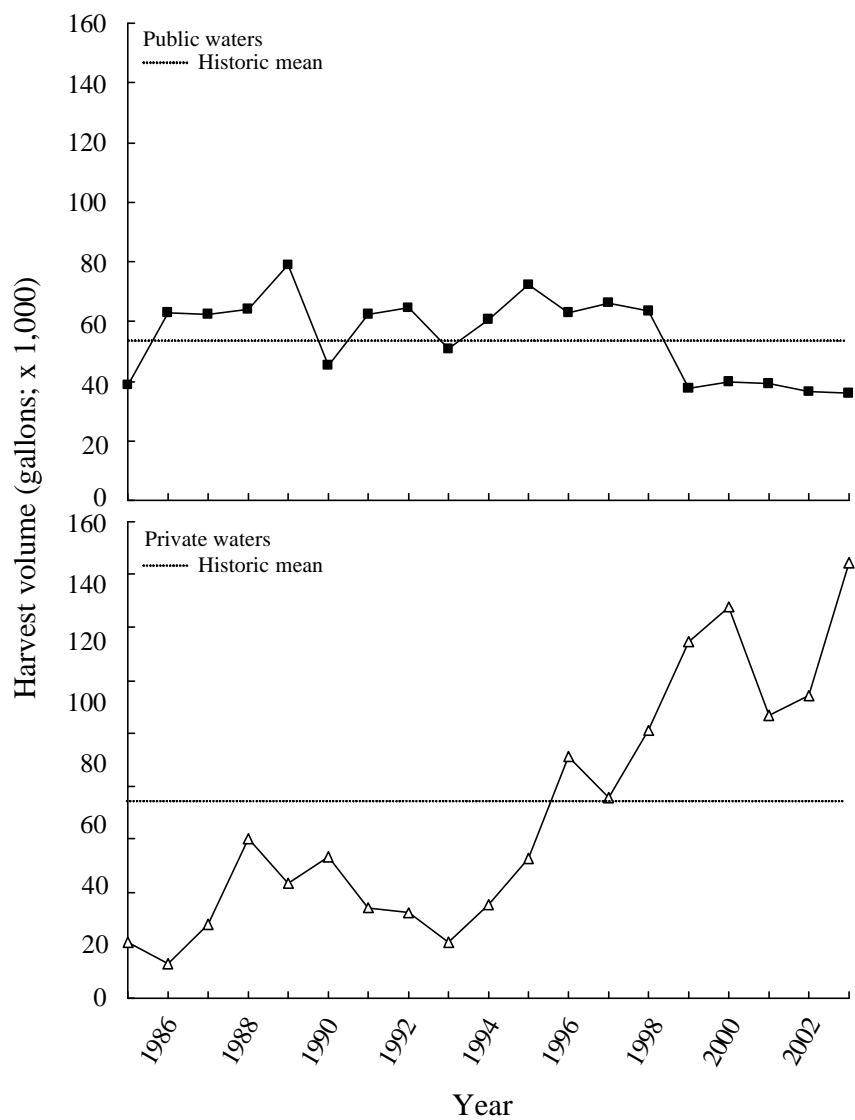
<i>Activity</i>	Retail		Wholesale		Combined	
<i>Source/Destination</i>	gallons	%	gallons	%	gallons	%
Fathead						
<i>Harvested</i>	3,696	100.0	196,568	100.0	200,264	100.0
Public water	394	10.7	35,390	18.0	35,784	17.9
Private water	3,303	89.4	161,178	82.0	164,481	82.1
<i>Purchased</i>	18,248	100.0	34,117	100.0	52,365	100.0
Resident wholesale	16,294	89.3	32,074	94.0	48,368	92.4
Imported wholesale	1,954	10.7	2,043	6.0	3,997	7.6
<i>Total Obtained</i> ¹	21,944	---	230,685	---	252,629	---
<i>Sold</i> ²	17,237	100.0	170,142	100.0	187,379	100.0
South Dakota ²	17,237	100.0	58,968	34.7	76,205	40.7
Exported ³	---	---	111,174	65.3	111,174	59.3
<i>Sold:Obtained Ratio</i>	0.7855	---	0.7376	---	0.7417	---
Sucker						
<i>Harvested</i>	143	100.0	1,625	100.0	1,768	100.0
Public water	3	2.1	0	0.0	3	0.2
Private water	140	97.9	1,625	100.0	1,765	99.8
<i>Purchased</i>	1,339	100.0	1,928	100.0	3,267	100.0
Resident wholesale	1,262	94.2	822	42.6	2,084	63.8
Imported wholesale	78	5.8	1,106	57.4	1,184	36.2
<i>Total Obtained</i> ¹	1,482	---	3,553	---	5,035	---
<i>Sold</i> ²	922	100.0	2,940	100.0	3,862	100.0
South Dakota ²	922	100.0	2,334	79.4	3,256	84.3
Exported ³	---	---	607	20.6	607	15.7
<i>Sold:Obtained Ratio</i>	0.6221	---	0.8275	---	0.7670	---
Shiner						
<i>Harvested</i>	126	100.0	432	100.0	558	100.0
Public water	0	0.0	317	73.4	317	56.8
Private water	126	100.0	115	26.6	241	43.2
<i>Purchased</i>	551	100.0	249	100.0	800	100.0
Resident wholesale	551	100.0	114	45.8	665	83.1
Imported wholesale	0	0.0	135	54.2	135	16.9
<i>Total Obtained</i> ¹	677	---	681	---	1,358	---
<i>Sold</i> ²	461	100.0	695	100.0	1,156	100.0
South Dakota ²	461	100.0	675	97.1	1,136	98.3
Exported ³	---	---	20	2.9	20	1.7
<i>Sold:Obtained Ratio</i>	0.6809	---	1.0206	---	0.8513	---

¹ Does not include baitfish obtained by resident wholesale from other resident wholesale.

² Does not include baitfish sold to resident wholesale from other resident wholesale.

³ Retail license holders may not export, wholesale or sell live baitfish to other retail dealers. Includes baitfish sold to export dealers and retail dealers in neighboring states.

Figure 1. Volume (gallons) of fathead minnows reported as harvested from public and private waters in South Dakota, and the historic mean during the years 1985 through 2003 (January 1 – December 31).



Baitfish dealers reported harvesting fathead minnows from 14 counties in South Dakota. Hamlin County (19.1%) yielded the greatest proportion of fathead minnows harvested from public waters followed by Charles Mix Country (15.6%), Clark County (14.0%) and Lake County (11.3%) (Figure 2). Approximately 28.5% of the fathead minnows were harvested from South Dakota public waters that were not specifically reported by baitfish dealers (Appendix 2). Baitfish imported from other states (5,316 gallons) represented below 3% of the total baitfish obtained by licensed baitfish dealers.

Resident Retail Dealers

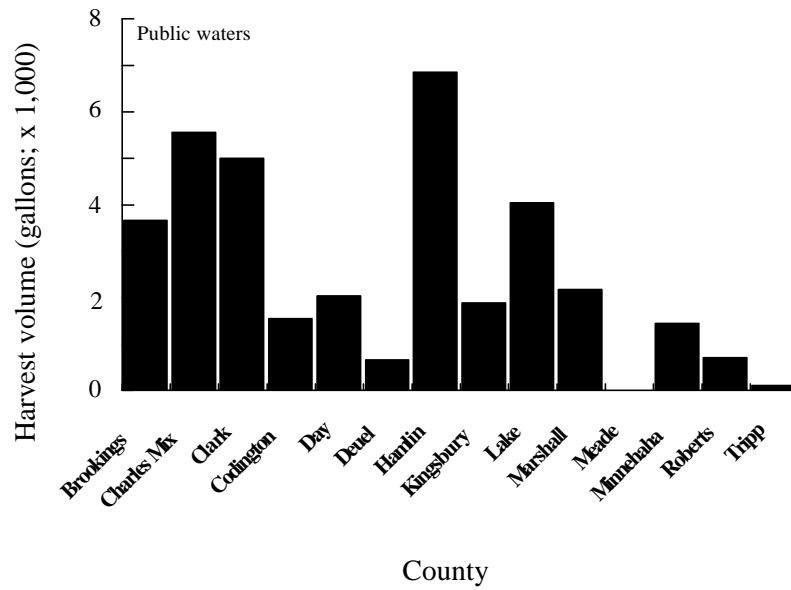
Resident retail dealers reported obtaining 24,103 gallons and selling 18,619 gallons of baitfish during 2003 (Table 2; Table 3). The “sold to obtained” ratio was 0.7725 indicating that nearly 25% of the baitfish obtained were either not reported sold, not sold, or lost to mortality. Resident retail dealers relied heavily on wholesale dealers for baitfish and directly harvested only 3,965 gallons (16.4% of total obtained) of baitfish from South Dakota waters. A total of 18,106 gallons of the baitfish obtained by retail baitfish dealers were purchased from resident wholesale dealers (89.9%) or imported from non-resident wholesale dealers (10.1%).

Comparison among baitfish types indicated that resident retail baitfish dealers obtained mostly fathead minnows (21,944 gallons) and that other baitfish (2,159 gallons) comprised a low proportion (9.0%) of the baitfish obtained. Approximately 11% of the fathead minnows harvested by resident retail baitfish dealers were harvested from public waters. Conversely, resident retail baitfish dealers harvested only about 2% of baitfish other than fathead minnows from public waters. Resident retail baitfish licenses do not permit the export of baitfish outside South Dakota; therefore, all baitfish sold (18,619 gallons) by resident retail baitfish dealers were sold in South Dakota.

Resident Wholesale Dealers

Resident wholesale dealers reported obtaining 234,919 gallons and selling 173,777 gallons of baitfish during 2003 (Table 2; Table 3). The “sold to obtained” ratio was 0.7397 indicating that over 25% of the baitfish obtained were either not reported sold, not sold, or lost to mortality. Resident wholesale dealers reported harvesting 198,625 gallons of baitfish from South Dakota waters. A total of 33,010 gallons (14.1%) of the baitfish obtained by resident wholesale baitfish dealers were obtained as inter-dealer transactions. Only 3,284 gallons (1.3%) of baitfish were imported from non-resident wholesale dealers indicating that resident wholesale baitfish dealers are largely obtaining baitfish from within South Dakota. Most baitfish sold in South Dakota originated from within South Dakota considering that 90% of the baitfish obtained by resident retail baitfish dealers were derived from resident wholesale baitfish dealers.

Figure 2. Volume (gallons) of fathead minnows reported as harvested from public waters in South Dakota by county during 2003 (January 1 – December 31).



Comparison among baitfish types indicated that resident wholesale baitfish dealers obtained mostly fathead minnows (252,629 gallons) and that other baitfish (6,393 gallons) comprised a low proportion (2.4%) of the baitfish obtained. Approximately 18.0% of the fathead minnows harvested by resident wholesale baitfish dealers were harvested from public waters. Similarly, resident wholesale baitfish dealers harvested nearly 13.8% of baitfish other than fathead minnows from public waters. Sales reported by resident wholesale baitfish dealers indicated that 111,801 gallons (64.3%) of the baitfish sold were exported outside of South Dakota. A total of 61,976 gallons (35.7%) of baitfish were sold within South Dakota after adjusting for inter-dealer transactions.

Export Dealers

Export baitfish dealers reported purchasing 126,766 gallons of baitfish from resident wholesale dealers and transporting the baitfish outside South Dakota's borders. However, resident wholesale dealers reported exporting only 111,801 gallons of baitfish; therefore, some transactions between wholesale baitfish dealers and export baitfish dealers were apparently not reported by wholesale dealers. The reported export of baitfish by export dealers represents approximately 54% of the total reported baitfish obtained by wholesale baitfish dealers. Export of baitfish out of South Dakota was generally to retail outlets, private hatcheries and public hatcheries in surrounding states. Nearly two-thirds of the baitfish exported from South Dakota by export baitfish dealers were destined for Minnesota (47,096; 37.1%) and Wisconsin (31,808; 25.1%) (Table 3).

Economic Value

The value of baitfish harvest to the South Dakota economy during 2003 based on the actual reported sales by baitfish dealers was nearly 3.2 million dollars. (Table 4). As reported previously, many baitfish dealers did not report any sales of baitfish even though they reported obtaining baitfish. Broughton and Potter (2002) estimated losses of near 4% by baitfish dealers, which indicates that most baitfish obtained are in fact sold. Therefore, a potential economic value of nearly 4.1 million dollars was estimated based on the assumption that 100% of the baitfish obtained were eventually sold (Table 4).

RECOMMENDATIONS

Changes to the bait report forms were implemented in 2004 and likely limited confusion due to verbiage. However, a field seeking a general cost/gallon of baitfish for each category to various vendor types would assist in developing an economic valuation of the baitfish industry in South Dakota.

Table 4. States of destination and the volume (gallons) of fathead minnows (fathead), suckers (sucker), and shiner minnows (shiner) exported from South Dakota as reported by South Dakota export baitfish dealers during 2003 (January 1 - December 31).

Activity State	N	Volume (gallons)			Combined
		Fathead	Sucker	Shiner	
Florida	1	2,443	0	0	2,443
Iowa	2	11,686	0	0	11,686
Illinois	1	5,031	0	0	5,031
Kansas	2	10,730	0	0	10,730
Minnesota	8	47,096	0	0	47,096
Missouri	1	850	0	0	850
Nebraska	1	100	0	0	100
Tennessee	1	17,032	0	0	17,032
Wisconsin	5	31,808	75	0	31,883
Totals	22	126,776	75	0	126,851

Table 5. Estimated economic value of the fathead minnow harvest to the South Dakota economy during 2003 (January 1 - December 31). Note: reported values are based on the actual sales transactions reported by baitfish dealers. In addition, potential values are based on the assumption that 100% of the baitfish obtained were eventually sold. Based on estimated rates reported by Broughton and Potter, 2002.

<i>Seller Type</i>		Dollars (\$)	
Purchaser	Gallons Sold	Rate	Value
Reported			
<i>Retail</i>	17,237	70.00	1,206,590
<i>Wholesale</i>			
Retail	58,968	13.00	766,597
Wholesale	32,074	8.50	272,629
Exported	111,174	8.50	944,979
<i>Total Reported</i>	219,453	---	3,190,795
Potential			
<i>Retail</i>			
Harvested	3,969	70.00	277,830
Purchased	18,248	70.00	1,277,360
<i>Wholesale</i>			
Retail ¹	80,048	13.00	1,040,624
Wholesale ¹	43,540	8.50	420,886
Export dealers ¹	150,637	8.50	1,077,596
<i>Total Potential</i>	274,225	---	4,094,296

¹ Estimated based on the proportion of reported sales and the total obtained baitfish.

Appendix 1. Volume (gallons) of fathead minnows reported as harvested from public and private waters in South Dakota, and the number of wholesale and retail licenses permitted during the years 1985 though 2003.

Year	Source			Licenses Issued	
	Public	Private	Combined	Retail	Wholesale
1985	38,476	21,171	59,647	---	---
1986	62,678	13,047	75,725	162	13
1987	62,306	28,133	90,439	178	14
1988	64,154	60,334	124,488	191	13
1989	78,653	43,614	122,267	195	17
1990	45,363	53,601	98,964	166	22
1991	62,604	34,163	96,767	155	21
1992	64,820	32,009	96,829	158	20
1993	50,814	21,392	72,206	152	18
1994	60,865	35,472	96,337	150	20
1995	72,247	53,004	125,251	140	17
1996	63,003	91,442	154,445	147	20
1997	66,024	75,441	141,465	149	20
1998	63,396	100,995	164,391	171	19
1999	37,442	134,563	172,005	197	24
2000	39,615	147,653	187,268	205	25
2001	39,362	106,921	146,283	175	22
2002	36,229	113,981	150,210	192	22
2003	35,784	164,481	200,264	175	22
Mean	54,939	70,075	125,013	170	19

Appendix 2. Public waters or public areas reported as sources of fathead minnows and the volume (Gallons) reported harvested by licensed baitfish dealers during 2003 (January 1 – December 31). All information is in “as-reported” form.

County	Reported Source	Gallons
Brookings	---	3,683
Charles Mix	Lake Andes	5,566
Clark	---	765
Clark	Cherry	4,232
Codington	---	737
Codington	Goose	835
Day	---	1,145
Day	Houge	391
Day	Lynn	495
Deuel	Francis	420
Deuel	Lone Tree	256
Hamlin	---	501
Hamlin	Opdahl Slough	6,335
Kingsbury	Plum	1,893
Lake	---	2,000
Lake	East Oldham Lake	1,147
Lake	Milwaukee	142
Lake	Mud	750
Marshall	Horseshoe	425
Marshall	Larson	643
Marshall	Mud	75
Marshall	Opitz	119
Marshall	Piyas	535
Marshall	Turtlefoot	365
Marshall	Two Island	40
Meade	---	2
Minnehaha	Clear	1,250
Minnehaha	Island	212
Roberts	---	100
Roberts	Drywood	602
Roberts	Lake Traverse	3
Tripp	Snow	120
Total		35,784

--- Unreported or unknown.

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